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basic imagery interpretation report

Moscow Aircraft Engine Plant Tushino 500 (S)

STRATEGIC WEAPONS INDUSTRIAL FACILITIES

USSR

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INSTALLATION OR ACTIVITY NAME					COUNTRY
Moscow Aircraft Engine Plant Tushino 500					UR
UTM COORDINATES	GEOGRAPHIC COORDINATES	CATEGORY	BE NO.	COMIREX NO.	NIETB NO.
	55-50-02N 037-26-20E				
MAP REFERENCE					
DMAAC. USATC, Series 200, Sheet 0167-5, scale 1:200,000 (UNCLASSIFIED)					
LATEST IMAGERY USED			NEGATION DATE (If required)		
			NA		

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ABSTRACT

1. (S/D) This is the first NPIC basic report on Moscow Aircraft Engine Plant Tushino 500, USSR, and satisfies the basic reporting requirement for that installation. The information cutoff date for this report is [REDACTED]

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2. (S/D) This report includes a discussion of construction activity observed throughout the plant prior to the cutoff date and a detailed analysis of modifications to the engine test buildings and delineates the components of a probable collocated branch of the Favorskiy Design Bureau. A location map, three annotated photographs, and three tables of mensural data are included in this report.

INTRODUCTION

3. (S/D) Moscow Aircraft Engine Plant Tushino 500 (Figure 1) is on the northwest edge of Moscow, 15 kilometers (km) south of Moscow/Sheremetyevo Airfield [REDACTED] and 7 km northwest of Moscow Central Airfield [REDACTED]

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4. (S/D) Engines attributed to the Favorskiy Design Bureau (formerly the Tumanskiy Design Bureau and originally the Mikulin Design Bureau) are currently produced at Plant 500. A branch of this design bureau (OKB) is probably located at Plant 500. This report discusses the components, construction, and production activity at Plant 500 and delineates the components of the probable collocated branch of the Favorskiy OKB.

BASIC DESCRIPTION

5. (S/D) Moscow Aircraft Engine Plant Tushino 500 extends approximately 1,035 meters east/west and 825 meters north/south and encompasses over 80 hectares (180 acres). Plant 500 is divided by a road (Skhodenskaya Ulitsa) into two areas: the west plant area and the east plant area (Figure 2 and Tables 1 and 2). These plant areas are interconnected by two underpasses. Both areas contain production buildings, engineering and engine test facilities, and numerous miscellaneous support buildings. In addition, the east plant area contains an internal combustion heatplant and a transformer yard which serves the entire plant. A probable OKB section (Figure 2 and Table 2) is also in the east plant area. All floorspace related to the OKB section is separately accounted for in this report and is not included as a part of the totals given for the east plant. A detailed analysis of the probable OKB is included.

6. (S/D) The total floorspace at Plant 500 (as of April 1981) is 349,961 square meters. The west plant area contains 133,831 square meters, the east plant area contains 167,984 square meters, and the OKB section contains 48,146 square meters.

Chronology of Construction**Construction through June 1964**

7. (S/D) The earliest available overhead photography of Plant 500 was acquired by the Germans in August 1942.¹ At that time, Plant 500 contained approximately 115,000 square meters of floorspace. During World War II, it is likely that Plant 500 was producing aircraft engines for aircraft produced at what was then Moscow Tushino Aircraft Plant 82 [REDACTED]. Plant 82 had been connected by a concrete taxiway to Moscow/Khimki Airfield [REDACTED] which served as the flyaway field for the plant.² Since then, however, both the concrete taxiway and Moscow/Khimki Airfield have been removed to make room for residential housing. Plant 82 is currently associated with the production of air-to-air missiles.

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8. (S/D) The first satellite imagery of reasonably good interpretability over Plant 500 was obtained in June 1964. By that time, the total floorspace for the plant had increased to 202,182 square meters. Of this total, production floorspace accounted for 112,418 square meters, administration/engineering/test floorspace for 70,306 square meters, and storage/support floorspace for 19,458 square meters.

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9. (S/D) In June 1964, the west plant area contained 49,280 square meters of floorspace—production accounted for 31,814 square meters, administration/engineering/test for 12,054 square meters, and storage/support for 5,412 square meters. The major facilities within this area included engine test building number 1 (item 1, Figure 2 and Table 2), an assembly building with a final assembly hall (items 7a and b), and two large subassembly buildings (items 12 and 28).

10. (S/D) The east plant area contained 125,976 square meters of floorspace as of June 1964. Production-related floorspace accounted for 80,604 square meters of the total, 32,291 square meters were administration/engineering/test, and 13,081 square meters were storage/support floorspace. The major structures within the east plant area included engine test building number 2 (item 47), five assembly buildings (items 13, 14, 25, 31, and 52), a foundry (item 55), five large shop buildings (items 46, 53, 61, 62, and 63), a fuel-blending building (item 43), and a heatplant (item 19).

11. (S/D) The probable OKB section (Figure 2 and Table 2) within the east plant area accounted for 26,926 square meters of the total floorspace in June 1964. None of this floorspace is dedicated to the series production of aircraft engines. Most of the floorspace (approximately 25,961 square meters) was administration/engineering/test floorspace, while 965 square meters was storage/support floorspace. Most of the floorspace in the OKB section was in three buildings: the engine test building number 3 (item 30, Figure 2) and two administration/engineering buildings (items 48 and 65).

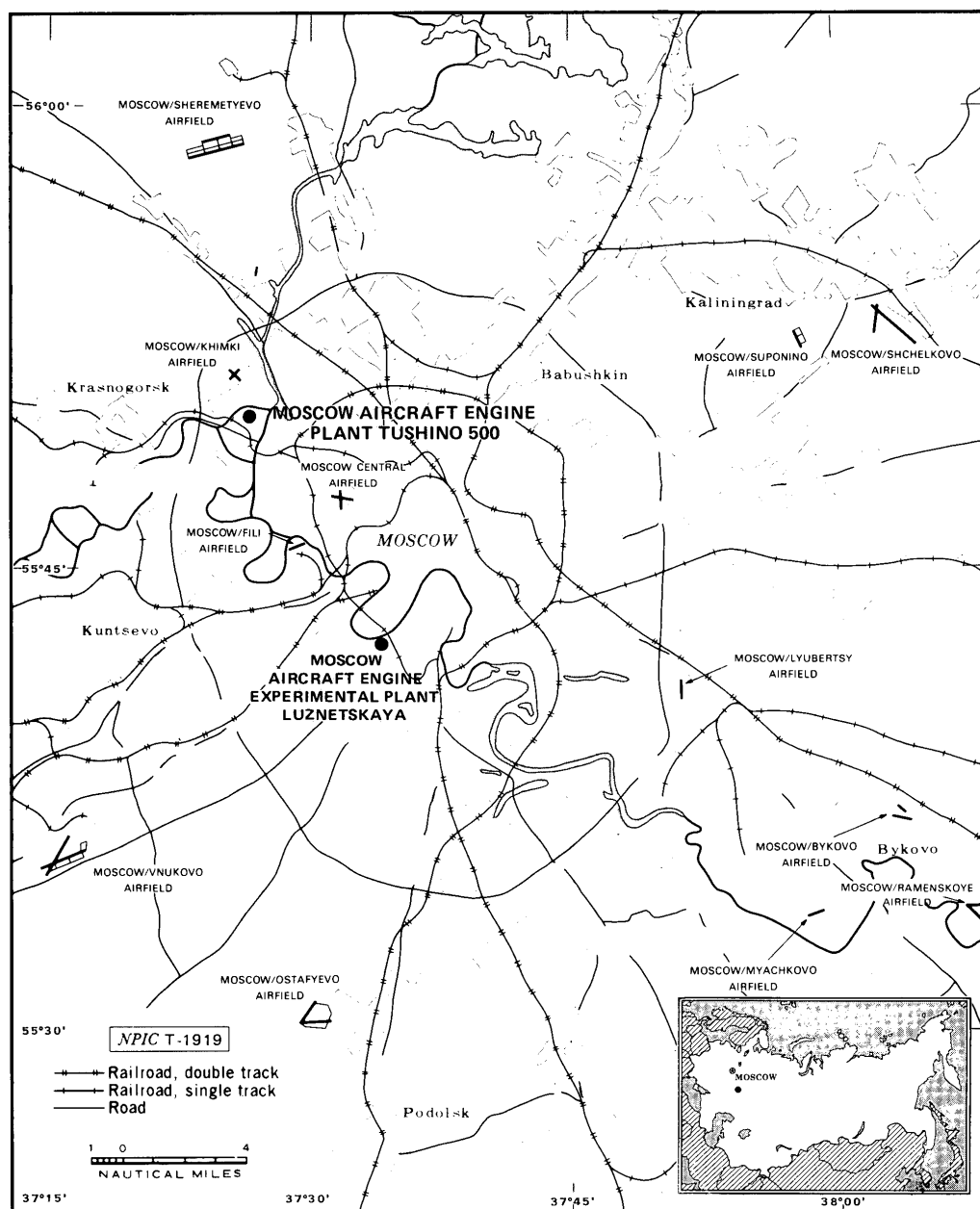


FIGURE 1. LOCATION OF MOSCOW AIRCRAFT ENGINE PLANT TUSHINO 500, USSR

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12. (S/D) By October 1972, the total floorspace for Plant 500 was 279,532 square meters, an increase of 77,350 square meters since June 1964. Production floorspace increased by 45,067 square meters, administration/engineering/test by 15,896 square meters, and storage/support by 16,387 square meters.

13. (S/D) By far, the largest increase of floorspace during this time period was within the west plant area. By October 1972, the total floorspace for this area was 104,421 square meters, an increase of 55,141 square meters since June 1964. Most of this increase was in production-related floorspace, which increased by 39,873 square meters to a total of 71,687 square meters. Administration/engineering/test floorspace increased by 9,804 square meters to 21,858 square meters. Storage/support floorspace doubled with the addition of 5,464 square meters, bringing the total to 10,876 square meters. New structures built between July 1964 and October 1972 included two large assembly buildings (items 12a and b³ and 16a and b), additions to an already existing assembly building (items 2; 22; 27; 29a, b and c; 34; and 35a), two additions to an administration building (items 24b and c), and several storage/support buildings.

14. (S/D) A limited amount of new floorspace totaling 22,209 square meters was constructed in the east plant area between July 1964 and October 1972. This raised the total floorspace in the east plant area to 148,185 square meters. Production floorspace increased by 5,194 square meters to 85,798 square meters. Administration/engineering/test floorspace totaled 38,383 square meters, an increase of 6,092 square meters since June 1964. Storage/support floorspace increased by 10,923 square meters and totaled 24,004 square meters by October 1972. Significant construction projects in the east plant area during this time period included a large warehouse (item 4), a multistory engineering building (item 33), a probable plant shop (item 26), two shop buildings (items 24 and 28a), and several additions to the heatplant (items 19b c, e, and f).

15. (S/D) No new construction was observed within the OKB section during this time period, and the floorspace total remained at 26,926 square meters as of October 1972.

November 1972—April 1981

16. (S/D) Floorspace at Plant 500 increased 70,429 square meters to 349,961 square meters between November 1972 and April 1981. (These figures include several buildings and additions that were still under construction in April 1981.) Production floorspace increased by 23,306 square meters to 180,791 square meters. Administration/engineering/test floorspace increased by 38,248 square meters to 124,450 square meters, primarily as a result of additions to the OKB section during this time period. Storage/support floorspace totaled 44,720 square meters by April 1981, an increase of 8,875 square meters from October 1972.

17. (S/D) The west plant area, as in the previous time period, had the largest gain in total floorspace, increasing by 29,410 square meters to 133,831 square meters. Production floorspace increased by 11,616 square meters to 83,303 square meters. Administration/engineering/test floorspace increased by 10,105 square meters to 31,963 square meters. Storage/support floorspace totaled 18,565 in April 1981, an increase of 7,689 square meters. New buildings and additions to the west plant area included additions to two assembly buildings (items 7d, h, and i and 16c, d, and e), three administration/engineering buildings (items 4, 17, and 38a), additions to a shop building (items 35b and c), and several large storage/support buildings (items 36, 37, 39, and 46). Two building additions remained under construction as of April 1981 (items 29d and 38b).

18. (S/D) The east plant area of Plant 500 gained 19,799 square meters of floorspace, bringing the total floorspace to 167,725 square meters by April 1981. Production floorspace increased by 11,690 square meters to 97,488 square meters. Administration/engineering/test floorspace increased by 7,669 square meters during this time period to 46,052 square meters. Storage/support floorspace increased by only 440 square meters to 24,444 square meters. This was due primarily to the razing of several older storage/support buildings to accommodate new construction. Construction projects contributing to the increase in east plant area floorspace during this time period included a large fabrication building (item 37), a multistory engineering building (item 59), a sawmill (item 39), additions to a large assembly building (items 13d, e, and g), an addition to engine test building number 2 (item 47e), additions to two shop buildings (items 9b and c and 10b), as well as several new storage/support buildings. In addition, a large assembly building (item 58) was under construction in April 1981.

19. (S/D) Floorspace in the OKB section almost doubled between November 1972 and April 1981, increasing by 21,220 square meters to 48,146 square meters. Administration/engineering/test floorspace increased by 29,474 square meters to 46,435 square meters. This was due almost entirely to the construction of two buildings: a probable experimental design/prototype engine assembly/checkout building (item 51) and a large engineering building (item 27) which, although depicted on Figure 2 as being outside of the OKB section, is probably associated with it. This engineering building was still under construction in April 1981. The OKB section storage/support floorspace also increased 746 square meters to 1,711 square meters during this time period.

Engine Test Buildings

20. (S/D) Three engine test buildings are at Moskva Aircraft Engine Plant Tushino 500, two in the east plant area and the other in the west plant area.

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Table 1.
Moscow Aircraft Engine Plant Tushino 500
(Keyed to Figure 2)

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Item	Function	Dimensions* (m)			Floorspace (sq m)	Date Complete**	Remarks
		L	W	H			
West Plant Area							
1	Engine test bldg						
a	Engine test sec	37	42	15	1,554	Aug 42—Jun 64	See Fig 3
b	Engr sec	42	8	15	1,344	Aug 42—Jun 64	4 stories
c	Support section	48	12	12	576	Aug 42—Jun 64	
d	Support section		Irreg		1,267	Aug 42—Jun 64	2 stories
e	Engine test sec	28	34	8	952	Aug 42—Jun 64	
f	Support section	31	6	3	186	Aug 42—Jun 64	
g	Engr sec	42	9	12	1,134	Aug 42—Jun 64	3 stories
2	Shop bldg	49	19	5	931	Feb 66	
3	Shop bldg	25	7	3	175		
4	Admin/engr bldg	30	8	8	480	Nov 67	2 stories
5	Vehicle shed	17	5	3	85	Feb 75	
6	Firehouse	21	19	4	399	Nov 67	3 bay
7	Assembly bldg						
a	Final assembly hall	55	25	14	1,375	Aug 42—Jun 64	
b	Subassembly sec	73	55	10	4,015	Aug 42—Jun 64	
c	Engr sec	55	6	12	990	Aug 42—Jun 64	3 stories
d	Subassembly sec	104	12	10	1,248	Mar 73	
e	Subassembly sec	81	70	10	5,670	Sep 71	
f	Shop/engr sec	96	8	10	1,536	Sep 71	2 stories
g	Shop/engr sec	78	15	10	2,340	Sep 71	2 stories
h	Support section	26	6	8	156	Jun 74	
i	Support section		Irreg		316	Sep 71	
8	Vehicle maint bldg	82	21	5	1,722	Aug 42—Jun 64	14 bay
9	Support bldg	10	7	4	70	Apr 79	
10	Storage bldg	20	8	5	160	Oct 72	
11	Storage bldg	11	5	4	55	Apr 79	
12	Subassembly bldg						
a	Subassembly sec	218	73	12	15,914	Feb 66	
b	Subassembly sec	218	36	12	7,848	Feb 66	
c	Support sec	35	6	11	210	Feb 66	
13	Storage bldg	30	8	7	240	Aug 79	
14	Storage bldg	30	16	8	480	Aug 77	
15	Storage bldg	41	9	Irreg	369	Feb 66	
16	Shop/assembly bldg						
a	Shop sec	96	74	15	7,104	Sep 71	
b	Engr sec	74	19	16	5,624	Sep 71	4 stories
c	Shop sec	74	48	15	3,552	Jun 74	
d	Support sec	74	9	15	1,998	Aug 77	3 stories
e	Shop sec	74	21	31	6,216	Aug 77	4 stories
17	Admin/engr bldg						
a	Admin/engr bldg	13	9	11	351	Jun 74	3 stories
b	Admin/engr bldg	17	13	7	442	Jun 74	2 stories
18	Storage bldg	20	6	5	120	Apr 79	
19	Storage bldg	7	7	3	49	Aug 78	
20	Support bldg	12	10	4	120	Apr 72	
21	Water treatment bldg	7	5	5	35	Aug 78	With adjacent separation tank
22	Engr bldg	99	16	11	6,336	Jun 74	4 stories
23	Vehicle shed	9	5	3	45	Jun 74	2 bay
24	Admin bldg						
a	Admin sec	35	20	10	1,400	Aug 42—Jun 64	2 stories
b	Admin sec	50	18	11	2,700	May 69	3 stories
c	Admin sec	25	20	8	1,000	Nov 67	2 stories
25	Admin bldg	72	13	15	4,680	Aug 42—Jun 64	5 stories
26	Vehicle shed	8	7	4	56	Nov 67	2 bay
27	Shop bldg	43	38	5	1,634	Nov 67	2 stories
28	Subassembly bldg						
a	Subassembly sec	215	55	5	11,825	Prior to Aug 42	
b	Shop/support sec	26	15	8	390	Prior to Aug 42	
c	Shop/support sec	84	10	8	840	Prior to Aug 42	
d	Shop/support sec	84	10	7	840	Prior to Aug 42	
e	Support sec	14	10	8	140	Prior to Aug 42	
f	Shop/engr sec	14	9	11	252	Prior to Aug 42	2 stories
g	Shop/engr sec	57	16	11	1,824	Prior to Aug 42	2 stories
h	Support sec	15	11	8	165	Prior to Aug 42	
i	Shop/engr sec	14	10	11	280	Prior to Aug 42	2 stories
j	Shop/engr sec	54	17	11	1,836	Prior to Aug 42	2 stories

**Referenced documents 1, 2, and 3 were used to determine the completion dates for structures built prior to June 1964.

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Table 1 (continued)

Item	Function	Dimensions* (m)			Floorspace (sq m)	Date Complete**	Remarks
		L	W	H			
29	Shop bldg						
a	High-bay shop sec	30	19	14	570	Nov 67	
b	Shop sec	43	6	5	258	Nov 67	
c	Compressor sec	19	13	9	247	Nov 67	
d	Storage/support sec				217	Ucon	
e	Storage/support sec	25	7	6	175	Prior to Aug 42	
30	Shop bldg		Irreg		2,492	Aug 42—Jun 64	
31	Storage/support bldg	20	13	5	260	Aug 42—Jun 64	
32	Storage/support bldg	25	13	Irreg	325	Nov 67	
33	Storage/support bldg	19	10	4	190	May 69	
34	Shop bldg		Irreg		1,738	Nov 67	2 stories
35	Shop bldg						
a	Storage/support sec	42	30	8	1,302	May 69	
b	Shop sec	25	24	8	600	Mar 73	
c	Support sec	15	12	5	180	Feb 75	
36	Storage bldg	58	26	5	1,508	Jun 74	
37	Storage bldg	55	18	7	990	Sep 76	
38	Engr bldg						
a	Engr sec	31	24	9	1,488	Aug 79	2 stories
b	Engr sec	31	24	Irreg	1,488	Ucon	2 stories
39	Storage bldg	31	26	5	806	Sep 76	
40	Storage bldg	52	12	6	624	Feb 66	
41	Storage/support bldg	26	23	8	598	Aug 42—Jun 64	
42	Support bldg	30	15	4	450	Feb 66	
43	Storage bldg		Irreg		200	Aug 42—Jun 64	U-shaped
44	Access control bldg	25	7	4	175	Sep 76	
45	Storage bldg	58	12	5	696	Feb 66	
46	Storage bldg	30	16	7	480	Aug 78	
47	Shop/support bldg		Irreg		123	Aug 42—Jun 64	
East Plant Area							
1	Transformer yard						
	control bldg		Irreg		819	Aug 42—Jun 64	
2	Storage shed	11	5	4	55	Jun 74	
3	Support bldg		Irreg		179	Mar 73	L-shaped
4	Warehouse						
a	Storage sec	98	55	9	5,390	Nov 67	
b	Support sec	61	10	7	610	May 69	
c	Shipping/rec sec	20	5	7	100	Sep 71	
5	Storage bldg	41	7	4	287	Nov 67	
6	Support bldg	20	8	9	320	Oct 72	2 stories
7	Storage bldg	40	16	5	640	Aug 42—Jun 64	
8	Storage bldg	16	16	5	256	Jun 74	
a	Shop sec	17	16	5	272	Aug 42—Jun 64	
b	Shop sec	18	13	6	234	Aug 79	
c	Support sec	19	6	5	114	Aug 79	
10	Shop bldg						
a	Shop sec	25	18	5	450	Aug 42—Jun 64	
b	Support sec		Irreg	8	372	Aug 79	2 stories
11	Storage bldg	31	11	5	341	Aug 79	
12	Shop bldg						
a	High-bay shop sec	37	17	8	629	Aug 42—Jun 64	
b	Support sec	37	7	5	259	Aug 42—Jun 64	
13	Subassembly bldg						
a	Subassembly sec	158	83	6	13,114	Prior to Aug 42	
b	Subassembly sec	158	37	12	5,846	Prior to Aug 42	
c	Engr sec	158	11	8	3,476	Prior to Aug 42	2 stories
d	Shop sec	27	17	8	918	Jun 74	2 stories
e	Shop sec	17	12	7	408	Jun 74	2 stories
f	Shop sec	39	21	5	819	Prior to Aug 42	
9	Shop/support sec	35	9	7	315	Prior to Aug 42	
h	Shop/support sec	22	9	7	198	Apr 72	
i	Shop/support sec	12	11	6	143	Apr 72	
j	Engr/support sec	17	11	13	561	Feb 75	3 stories
k	Shop/support sec	47	11	4	517	Prior to Aug 42	
l	Engr/support sec	29	8	11	696	Prior to Aug 42	3 stories
m	Shop/support sec	23	8	6	184	Prior to Aug 42	
14	Subassembly/shop bldg						
a	Subassembly/shop sec	147	Irreg	8	7,212	Aug 42—Jun 64	
b	Engr sec	51	10	8	1,020	Aug 42—Jun 64	2 stories
c	Engr/support/bldg	13	5	12	210	Feb 66	3 stories
d	Storage/support sec	13	7	4	91	Feb 66	
e	Shop/support sec	11	5	6	55	Feb 66	
f	Shop/support sec	18	6	5	108	Feb 66	
g	Shop/support sec	10	7	7	70	Feb 66	
15	Storage bldg		Irreg	3	163	Apr 72	
16	Storage bldg	24	6	3	144	Apr 79	

**Referenced documents 1, 2, and 3 were used to determine the completion dates for structures built prior to June 1964.

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Table 1 (continued)

Item	Function	Dimensions* (m)			Floorspace (sq m)	Date Complete**	Remarks
		L	W	H			
17	Support bldg	Irreg			117	Apr 72	
18	Storage bldg	20	8	4	160	Oct 72	
19	Steamplant						
a		91	Irreg	12	2,211	Aug 42—Jun 64	
b	Support sec	45	12	4	540	Nov 67	
c	Support sec	27	7	8	189	Nov 67	2 stories
d	Support sec	19	11	10	836	Aug 42—Jun 64	4 stories
e	Boilerhouse	Irreg			543	Nov 67	
f	Support sec	12	9	4	108	Nov 67	
20	Shop bldg	61	Irreg	6	1,859	Aug 42—Jun 64	
21	Support bldg	19	6	7	114	Ucon	2 stories
22	Support bldg	21	2	5	441	Aug 42—Jun 64	
23	Storage bldg	22	9	5	198	Nov 67	
24	Shop bldg	Irreg			1,471	Nov 67	
25	Subassembly bldg						
a	Subassembly sec	87	73	6	6,351	Prior to Aug 42	
b	Shop sec	73	12	9	1,752	Prior to Aug 42	2 stories
c	High-bay shop/assembly sec	73	19	8	1,387	Prior to Aug 42	
26	Probable paint shop						
a	Painting sec	18	8	5	144	Nov 67	
b	Finishing sec	22	7	4	154	Nov 67	
c	Drying sec	7	7	8	49	Nov 67	
27	Engr bldg						Probably OKB associated
a	Engr sec	43	18	25	4,644	Oct 80	6 stories
b	Engr sec	43	28	15	4,816	Ucon	4 stories
28	Shop bldg						
a	Shop sec	Irreg			480	Nov 67	
b	Shop sec	17	7	8	238	Aug 77	2 stories
29	Storage bldg	30	15	7	450	Oct 80	
30	Engine test bldg						Probably OKB associated
a	Engine test sec	60	32	7	1,920	Prior to Aug 42	see Fig 4
b	Engr sec	33	9	12	891	Prior to Aug 42	3 stories
c	Engr sec	9	7	6	126	Prior to Aug 42	2 stories
d	Support sec	15	Irreg	4	252	Prior to Aug 42	
31	Subassembly bldg						
a	Subassembly sec	73	72	9	5,256	Aug 42—Jun 64	5 stories
b	Engr sec	73	11	13	4,015	Aug 42—Jun 64	5 stories
c	Engr sec	73	6	13	2,190	Aug 42—Jun 64	
d	Shop section	59	5	7	295	Nov 67	
32	Storage bldg						
a	Storage sec	21	7	5	147	Jun 74	
b	Storage section	11	7	5	77	Jun 74	
33	Engr bldg	73	14	16	3,066	Nov 67	3 stories
34	Storage bldg	11	5	4	55	Apr 79	
35	Vehicle maint bldg						
a	Vehicle maint sec	Irreg			1,170	Aug 42—Jun 64	11 bay
b	Storage/support sec	Irreg			336	Aug 77	
36	Transshipment bldg	49	7	5	343	Oct 80	
37	Fabrication bldg						
a	Fabrication sec	132	48	12	6,336	Sep 76	
b	Engr sec	54	10	11	1,620	Jun 74	3 stories
c	Support sec	15	4	6	60	Apr 79	
38	Storage/support bldg	31	10	6	310	Aug 79	
39	Sawmill						
a	Mill sec	37	13	7	481	Feb 75	
b	Support sec	37	5	7	370	Feb 75	2 stories
40	Storage bldg	21	10	4	210	Prior to Aug 42	
41	Storage bldg	27	10	4	270	Nov 67	
42	Storage bldg	Irreg			694	Prior to Aug 42	
43	Fuel-blending bldg	Irreg			276	Aug 42—Jun 64	
44	Pumphouse	12	9	4	108	Nov 67	
45	Pumphouse	11	6	4	66	Nov 67	
a	Shop sec	97	18	11	1,746	Prior to Aug 42	
b	Support sec	18	6	8	216	Prior to Aug 42	2 stories
c	Support sec	22	6	5	264	Prior to Aug 42	2 stories
d	Shop/support sec	11	7	10	154	Prior to Aug 42	2 stories
e	Shop/support sec	25	8	10	200	Prior to Aug 42	
47	Engine test bldg						See Fig 4
a	Shop sec	119	27	7	3,213	Prior to Aug 42	
b	Engine test sec	127	27	10	3,429	Prior to Aug 42	
c	Engr sec	124	9	9	2,232	Prior to Aug 42	2 stories
d	Shop/engr sec	29	6	10	348	Prior to Aug 42	2 stories
e	Shop sec	19	15	8	285	Oct 80	

**Referenced documents 1, 2, and 3 were used to determine the completion dates for structures built prior to June 1964.

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Table 1 (continued)

Item	Function	Dimensions* (m)			Floorspace (sq m)	Date Complete**	Remarks
		L	W	H			
48	Admin/engr/bldg	91	17	17	7,735	Aug 42—Jun 64	5 stories, prob OKB associated
49	Support bldg	25	9	4	225	Aug 42—Jun 64	Probably OKB associated
50	Admin/engr bldg	Irreg			1,162	Aug 42—Jun 64	Probably OKB associated
51	Prob experimental design/prototype assembly bldg						
a	Design/assembly sec	56	27	24	7,560	Mar 73	5 stories
b	Design/assembly sec	56	11	20	2,464	Mar 73	4 stories
c	Support sec	26	5	4	130	Mar 73	
d	High-bay assembly/ checkout sec	30	6	4	180	Mar 73	
e	Shipping/rec sec	18	11	5	198	Mar 73	
f	Support sec	29	11	9	319	Mar 73	
g	Support sec	11	9	5	99	Mar 73	
h	Freight elevator	10	4	22	—	Mar 73	5 stories
52	Subassembly bldg						
a	Subassembly sec	122	108	11	13,176	Prior to Aug 42	
b	Engr sec	128	20	16	10,240	Prior to Aug 42	4 stories
c	Support sec	43	6	6	258	Prior to Aug 42	
53	Shop bldg						
a	Shop sec	44	38	6	1,672	Prior to Aug 42	
b	Shop sec	44	25	9	1,100	Prior to Aug 42	
c	Shop sec	68	6	11	408	Prior to Aug 42	
d	Shop sec	50	18	12	900	Prior to Aug 42	
e	Engr sec	50	6	9	600	Prior to Aug 42	2 stories
f	Support sec	13	4	4	52	Prior to Aug 42	
g	Support sec	9	5	7	45	Prior to Aug 42	
h	Support sec	12	5	5	60	Prior to Aug 42	
i	Support sec	9	8	4	72	Prior to Aug 42	
54	Shop bldg						
a	High-bay shop sec	32	21	9	672	Prior to Aug 42	
b	Shop sec	21	18	5	378	Prior to Aug 42	
55	Foundry bldg						
a	Foundry sec	Irreg			3,447	Prior to Aug 42	
b	Engr sec	57	9	11	1,539	Prior to Aug 42	3 stories
c	Engr sec	33	8	14	1,056	Prior to Aug 42	4 stories
56	Storage bldg	15	7	4	105	Nov 67	
57	Storage/support bldg	30	11	6	330	Aug 42—Jun 64	
59	Fabrication/assembly bldg						
a	Fabrication/assembly sec	72	49	12	3,528	Ucon	
b	Fabrication/assembly sec	49	25	12	1,225	Ucon	
c	Engr sec	49	12	14	2,352	Ucon	4 stories
59	Engr bldg	49	16	15	3,136	Oct 80	4 stories
60	Compressor bldg	15	10	5	150	Aug 42—Jun 64	
61	Shop/engr bldg						
a	High-bay shop sec	61	37	9	2,257	Prior to Aug 42	
b	Engr sec	25	17	9	850	Prior to Aug 42	2 stories
c	Engr sec	15	4	4	60	Prior to Aug 42	
d	Engr sec	20	7	8	280	Prior to Aug 42	2 stories
e	Engr sec	20	4	4	80	Prior to Aug 42	
f	High-bay shop sec	31	20	7	620	Prior to Aug 42	
g	High-bay shop sec	26	21	7	546	Prior to Aug 42	
h	Support sec	26	17	5	442	Prior to Aug 42	
i	High-bay shop sec	43	31	7	1,333	Prior to Aug 42	
j	Storage/support sec	Irreg			271	Prior to Aug 42	
62	Shop bldg						
a	Shop sec	39	20	7	780	Feb 66	
b	Shop sec	22	20	3	440	Feb 66	
c	Shop sec	40	20	7	800	Feb 66	
d	Engr sec	29	10	6	580	Feb 66	2 stories
e	Support sec	79	4	3	316	Feb 66	
f	Support sec	79	4	3	316	Feb 66	
63	Shop bldg						
a	Shop sec	52	19	7	988	Prior to Aug 42	
b	Shop sec	37	19	5	703	Prior to Aug 42	
c	Engr sec	10	9	7	180	Prior to Aug 42	2 stories
d	Support sec	9	9	4	81	Prior to Aug 42	
64	Storage/support bldg						
a	Storage/support sec	9	6	5	54	Nov 67	
b	Storage/support sec	9	5	3	45	Nov 67	

**Referenced documents 1, 2, and 3 were used to determine the completion dates for structures built prior to June 1964.

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Table 1 (continued)

Item	Function	Dimensions* (m)			Floorspace (sq m)	Date Complete**	Remarks
		L	W	H			
65	Admin/engr bldg						Probably OKB associated
a	Admin/engr sec	61	10	15	2,440	Prior to Aug 42	4 stories
b	Admin/engr sec	Irreg		11	1,914	Prior to Aug 42	3 stories
c	Admin/engr sec	Irreg			4,544	Prior to Aug 42	4 stories
d	Admin/engr sec	13	9	8	234	Aug 42—Jun 64	2 stories
e	Admin/engr sec	Irreg			1,338	Prior to Aug 42	3 stories
f	Reception area	23	16	5	368	Aug 42—Jun 64	
g	Engr/lab sec	23	9	15	1,449	Aug 42—Jun 64	7 stories
h	Support sec	12	10	8	120	Prior to Aug 42	
i	Admin/engr sec	46	16	11	2,208	Prior to Aug 42	3 stories
j	Admin/engr sec	18	15	11	810	Aug 79	3 stories
66	Engr bldg	43	13	13	2,236	Apr 72	4 stories
Total plant floorspace					349,961 square meters		

**Referenced documents 1, 2, and 3 were used to determine the completion dates for structures built prior to June 1964.

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Table 2.

History of Floorspace Construction at Moscow Aircraft Engine Plant Tushino 500

This table in its entirety is classified SECRET/WNINTEL

Floorspace Constructed Prior to Jun 64*	West Plant Area	East Plant Area	Total Net Floorspace OKB Section	Plant Floorspace Gain**	Totals
Production	31,814	80,604		—	112,418
Administration/engineering/test	12,054	32,291	25,961	—	70,306
Storage/support	5,412	13,081	965	—	19,458
Total floorspace as of Jun 64	49,280	125,976	26,926	—	202,182
Net floorspace gained Jul 64—Oct 72**					
Production	39,873	5,194		45,067	157,485
Administration/engineering/test	9,804	6,092		15,896	86,202
Storage/support	5,464	10,923		16,387	35,845
Total net gain	55,141	22,209		77,350	—
Total floorspace as of Oct 72	104,421	148,185	26,926	—	279,532
Net floorspace gained Nov 72—Apr 81**					
Production	11,616	11,690		23,306	180,791
Administration/engineering/test	10,105	7,669	20,474	38,248	124,450
Storage/support	7,689	440	746	8,875	44,720
Total net gain	29,410	19,799	21,220	70,429	—
Total floorspace as of Apr 81	133,831	167,984	48,146	—	349,961

*Dimensions in square meters.

**Net floorspace gained is the actual increase of floorspace realized after accounting for building construction and demolition projects.

21. (S/D) Engine test building number 1 (Figure 3 and Table 3) in the west plant area is the newest of the engine test buildings at Plant 500. This building was constructed between August 1942 and February 1964. The building contains nine engine test cells of the composite type.* No additions or modifications to engine test building number 1 have been observed since June 1964.

22. (S/D) Engine test building number 2 (Figure 4 and Table 3) in the east plant area is the largest of the engine test buildings at Plant 500. Constructed prior to August 1942, this building currently contains two U-type cells (cells numbers 1 and 4) and eight modified U-type cells (cells 2, 3, 5, 6, 7, 8, 9, and 10). Engine test building number 2 was originally constructed with ten U-type cells, each with a single vertical air intake and a single vertical exhaust. By June 1964, only three test cells (cells 1, 3, and 4) retained the original U-configuration; the remaining seven (cells 2, 5, 6, 7, 8, 9, and 10) had been converted to the modified U-type by the addition of a cylindrical exhaustor to each cell. The original vertical exhaust of the modified U-type cells serves as a secondary air intake, thus, increasing the potential airflow for these cells. From 1972 through 1976, a program to modify the exhaustors of engine test

*Composite applies to test cells which were originally constructed with a vertical primary air intake, a vertical secondary air intake, and a vertical exhaustor and were not modified to this configuration from an older type.

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Table 3.
Engine Test Buildings
(Keyed to Figure 3)

This table in its entirety is classified SECRET/WNINTEL

Test Cell No	Type	Primary Intake Dimensions*	Secondary Intake Dimensions*	Exhauster Dimensions*
Engine Test Building Number 1				
1	Composite	40 x 8 (serves as primary intake for test cells 1-5)	40 x 6 (serves as secondary intake for test cells 1-5)	8 x 8
2	Composite			8 x 8
3	Composite			8 x 8
4	Composite			8 x 8
5	Composite			8 x 8
6	Composite	31 x 6 (serves as primary intake for test cells 6-9)	24 x 8 (serves as secondary intake for test cells 6-9)	8 x 8
7	Composite			8 x 8
8	Composite			8 x 8
9	Composite			8 x 8
Engine Test Building Number 2				
1	U	9 x 8	None	9 x 8 (with integral 6-meter- diam cylindrical exhauster)
2	Modified U	12 x 11	12 x 11	(diam)
3	Modified U	9 x 6	9 x 8	8 x 4
4	U	9 x 6	None	9 x 8
5	Modified U	8 x 7	8 x 7	8 x 8

*Dimensions in meters.

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Table 3 (continued)

Test Cell No	Type	Primary Intake Dimensions*	Secondary Intake Dimensions*	Exhauster Dimensions*
6	Modified U	14 x 8 (serves as primary intake for test cells 6 & 7)	14 x 8 (serves as secondary intake for test cells 6 & 7)	8 x 8
7	Modified U			8 x 8
8	Modified U	14 x 8 (serves as primary intake for test cells 8 & 9)	14 x 8 (serves as secondary intake for test cells 8 & 9)	8 x 8
9	Modified U			8 x 8
10	Modified U	7 x 8	7 x 8	8 x 8
Engine Test Building Number 3				
1	Prob. modified inverted L	None	None	2 (diam)
2	Prob modified		7 x 5 (may serve as secondary intake for test cells 1, 2, & 3)	6 x 3
3	Prob modified inverted L	None	None	2 (diam)

*Dimensions in meters.

building number 2 was observed. By August 1972, vertical exhaust towers replaced the cylindrical exhausters for test cells 7 and 8. By January 1974, a vertical exhaust tower had replaced the cylindrical exhauster of test cell number 5. In June 1975, two vertical exhaust towers were observed in place of the cylindrical exhausters of test cells 6 and 9 and another exhaust tower was under construction at test cell 10. By September 1976, the exhaust tower for test cell 10 had been completed. Also in September 1976, a short rectangular exhauster was observed at test cell number 3, changing the configuration of this cell from a standard U-type to a modified U-type. Between August 1972 and September 1976, a cylindrical exhauster was added to test cell number 1 as an integral part of the original exhaust port. Test cell number retains a standard U-configuration as there is no secondary air intake.

23. (S/D) Engine test building number 3 (Figure 4 and Table 3) in the east plant area is the smallest of the engine test buildings at Plant 500. This building, constructed prior to August 1942, contains three engine test cells with a probable modified inverted-L configuration. Test cells numbers 1 and 3 have vertical cylindrical exhausters while test cell number 2 has a vertical tower exhauster. A single air intake is positioned over test cell number 2 and may serve as a secondary air intake for all three test cells. The primary air source for the three cells may be internal compressed air as no primary air intakes could be identified. The vertical tower exhauster of test cell number 2 was completed in January 1979. Prior to that date, test cell number 2 had a vertical cylindrical exhauster slightly larger than those of cells numbers 1 and 3.

Probable Favorskiy OKB Section

24. (S/D) A probable OKB section is situated along the eastern edge of the east plant area. It includes three administration/engineering buildings (items 48, 50, and 65, Figure 2), a probable experimental/design/prototype engine assembly/checkout building (item 51), a small prototype engine test building (item 30), and a support building (item 49). A new engineering building (item 27) may also be associated with the probable OKB area. All of the buildings in this section are either separately secured from the plant or form a part of the plant's eastern boundary.

25. (S/D) Although the presence of an OKB section at Plant 500 has not been confirmed, the imagery does provide evidence of its existence. The best evidence available is the presence of engine test building number 3 in this section of the plant. This building is much smaller than either of the other engine test buildings at Plant 500. The test cells of engine test building number 3 are of a different configuration and have a lesser airflow capability than those of engine test buildings numbers 1 and 2. These smaller cells are, therefore, probably less suitable for use in the testing of the series production engines which are tested in the larger engine test buildings. Engine test building number 3 is more likely being used for some limited testing of experimental and prototype engines. The location of this test building, among a high concentration of engineering buildings, suggests an association with an OKB which would be responsible for the designing, development, and testing of new or modified aircraft engines.

26. (TSRU) Several Soviet aircraft engine plants have been identified with collocated OKB areas.** The collocation of an OKB branch with a series production plant is a logical development because of the special-purpose equipment and tooling available to the OKB at the plant. Soviet OKBs use this special

**Soviet aircraft engine plants with collocated OKB areas: Kuybyshev Aircraft Engine Plant Frunze 24 - Kuznetsov OKB, Leningrad Aircraft Engine Plant 117 - Izotov (Klimov) OKB, Perm Aircraft Engine Plant Stalin 19 - Solovyev OKB; and Zaporozhye Aircraft Engine Plant 478 - Lotarev (Ivchenko) OKB.

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equipment since it involves the series production plants in engine development and reduces the time and cost which result from the technical preparation of new designs for series production.⁵

27. (TSRU) Plant 500 has been associated with the series production of engines designed by the Favorskiy OKB (formerly the Tumanskiy OKB). It is, thus, likely that the probable OKB section at Plant 500 is a branch of the Favorskiy OKB. Moscow Aircraft Engine Experimental Plant Luznetskaya 300 (BE [redacted]) is the major design, development, and test facility associated with the Favorskiy OKB.^{6,7}

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Production Activity

28. (TSRU) Plant 500 has been credited with being the production facility for several fighter/light bomber engines designed by the Favorskiy OKB (formerly the Tumanskiy OKB and originally the Mikulin OKB). The production status of these engines cannot be conclusively determined. This is due primarily to the use of enclosed or covered storage at Plant 500 which prevents the identification of the various engine shipping containers. The different engines produced at Plant 500 and their probable production status are as follows:

- AM-5: A turbojet engine designed by A.A. Mikulin and used in the FLASHLIGHT A.⁴ With the FLASHLIGHT no longer in service it can be assumed that the AM-5 engine is no longer in production.
- R-11F2-300: A single-shaft turbojet with afterburner designed by S.K. Tumansky and used in the FISHBED A, C, D, E, and F; the FIREBAR; the BREWER; and the FLAGON A, C, and D.⁴ None of these aircraft are currently in production although many are still in service in the Soviet Union. The R-11F2-300 is probably no longer in full-scale production; however, a limited number of replacement engines may be in production at Plant 500.
- R-13-300: A more powerful, lighter weight version of the R-11F2-300 and used in the FISHBED H, J, K, and L and the FLAGON E, F, and G.⁴ This engine may also power the RAM-J, a close-air support aircraft currently under development in the Soviet Union.⁸ If so, then this engine should remain in production at Plant 500 for several years.

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REQUIREMENT

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